We claim:

1. A method of inhibiting the function of a prokaryotic or eukaryotic integral membrane protein having at least one transmembrane domain, said method comprising

contacting the integral membrane protein with a peptide comprising the amino acid sequence of said at least one transmembrane domain or an effective fragment or analogue of said peptide.

2. The method of claim 1 wherein the integral membrane protein is a prokaryotic or eukaryotic plasma membrane protein.

3. The method of claim 1 wherein the integral membrane protein is a prokaryotic or eukaryotic intracellular membrane.

4. The method of claim 2 wherein the integral membrane protein is a mammalian plasma membrane protein.

5. The method of claim 4 wherein the integral membrane protein is selected from the group consisting of

(a) a G-protein coupled receptor;
(b) a tyrosine kinase receptor;
(c) an ion channel;
(d) an ion channel receptor;
(e) a channel protein;
(f) a T cell antigen receptor; and
(g) a transporter protein.

6. The method of claim 5 wherein the integral membrane protein is a G-protein coupled receptor.

7. The method of claim 6 wherein the G-protein coupled receptor is a dopamine receptor.

8. The method of claim 7 wherein the dopamine receptor is a D1 dopamine receptor and the peptide is selected from the group consisting of

(a) ILTACFLSLLILSTLLGNTLVCAAV;
(b) FFVISLAVSDLLVAVLVMPWKAVAEIA;
(c) NIWVAFDIMCSTASILNLCVISVD;
(d) AAFILISVAWTLSVLISFIPVQLSW;
(e) TYAISSSVISFYIPVAIMIVTYTRI;
(f) TLSVIMGVFVCCWLPFFILNCILPFC;
(g) FDSNTFDVFVWFGWANSSLNPIIYAFNAD and
(h) an effective analogue or fragment of (a) to (g).

9. The method of claim 7 wherein the dopamine receptor is a D2 dopamine receptor and the peptide is selected from the group consisting of

(a) ATLLTLLIAVIVFGNVLVCMAVS;
(b) LIVSLAVADLLVATLMPWVVYLEVV;
(c) IVFTLDVMMCTASILNLCAISI;
(d) VTVMISIVWVLSFTISCPLLFGL;
(e) PAFVVYSSIVSFYVPFIVTLLVYI;
(f) MLAIVLGVFIICWLPFFITHILN;
(g) VLYSAFTWLGYVNSAVNPIIYTTF and
(h) an effective analogue or fragment of (a) to (g).

10. The method of claim 7 wherein the dopamine receptor is a D2 dopamine receptor and the peptide is selected from the group consisting of

(a) YATLLTLLIAVIVFGNVLVC;
(b) VSLAVADLLVATLVMPWVVY;
(c) TLDVMMCTASILNLCAISID;

(d) RVTVMISIVWVLSFTISCPL;
(e) PAFVVYSSIVSFYVPFIVTL;
(f) LAIVLGVFIICWLPFFITHI; and
(g) LYSAFTWLGYVNSAVNPIIY.

11. The method of claim 6 wherein the G-protein coupled receptor is an adrenergic receptor.

12. The method of claim 11 wherein the adrenergic receptor is a β1-adrenergic receptor and the peptide is selected from the group consisting of
(a) GMGLLMALIVLLIVAGNVLVIVAI;
(b) IMSLASADLVMGLLVVPFGATIVV
(c) ELWTSVDVLCVTASIETLCFIALD
(d) RGLVCTVWAISALVSFLPILMHWW
(e) RAYAIASSVVSFYVPLCIMAFVYL
(f) LGIIMGVFTLCWLPFFLANVVKAF
(g) RLFVFFNWLGYANSAFNPIIYCRS; and
(h) an effective analogue or fragment of (a) to (g).

13. The method of claim 11 wherein the receptor is a β1-adrenergic receptor and the peptide is FFNWLGYANSAFNP.

14. The method of claim 11 wherein the receptor is an α1A-adrenergic receptor and the peptide is selected from the group consisting of
(a) GVGVGFLAAFILMAVAGNLLVILSV;
(b) FIVNLAVADLLLSATVLPFSATMEVL;
(c) DVWAAVDVLCCTASILSLCTISV;
(d) AAILALLWVVALVVSVGPLLGWKEP;
(e) AGYAVFSSVCSFYLPMAVIVVMYC;
(f) LAIVVGVFVLCWFPFFFVLPLGSL;
(g) EGVFKVIFWLGYFNSCVNPLIYPCS; and

(h) an effective analogue or fragment of (a) to (g).

15. The method of claim 11 wherein the receptor is an α1A-adrenergic receptor and the peptide is VFKVIFWLGYFNSCVN.

16. The method of claim 1 wherein the integral membrane protein has a plurality of transmembrane domains and wherein the peptide comprises the amino acid sequence of any one of said plurality of transmembrane domains or a fragment or analogue thereof.

17. The method of any of claims 1 to 16 wherein the integral membrane protein is a human protein.

Sub C1

18. A method of preventing or treating a disorder in a mammal characterised by disordered function of an integral membrane protein having at least one transmembrane domain, said method comprising

administering to the mammal an effective amount of a peptide comprising the amino acid sequence of said at least one transmembrane domain or an effective fragment or analogue of said peptide.

19. The method of claim 18 wherein the integral membrane protein is a prokaryotic or eukaryotic plasma membrane protein.

Sub C2

20. The method of claim 18 wherein the integral membrane protein is a prokaryotic or eukaryotic intracellular membrane.

21. The method of claim 19 wherein the integral membrane protein is a mammalian plasma membrane protein.

22. The method of claim 21 wherein the integral membrane protein is selected from the group consisting of

(a) a G-protein coupled receptor;
(b) a tyrosine kinase receptor;
(c) an ion channel;
(d) an ion channel receptor;
(e) a channel protein;
(f) a T cell antigen receptor; and
(g) a transporter protein.

23. The method of claim 22 wherein the integral membrane protein is a G-protein coupled receptor.

24. The method of claim 23 wherein the G-protein coupled receptor is a dopamine receptor.

25. The method of claim 24 wherein the dopamine receptor is the D1 dopamine receptor and the peptide is selected from the group consisting of

(a) ILTACFLSLLILSTLLGNTLVCAAV;
(b) FFVISLAVSDLLVAVLVMPWKAVAEIA;
(c) NIWVAFDIMCSTASILNLCVISVD;
(d) AAFILISVAWTLSVLISFIPVQLSW;
(e) TYAISSSVISFYIPVAIMIVTYTRI;
(f) TLSVIMGVFVCCWLPFFILNCILPFC;
(g) FDSNTFDVFVWFGWANSSLNPIIYAFNAD and
(h) an effective analogue or fragment of (a) to (g).

26. The method of claim 24 wherein the dopamine receptor is a D2 dopamine receptor and the peptide is selected from the group consisting of

(a) ATLLTLLIAVIVFGNVLVCMAVS;
(b) LIVSLAVADLLVATLMPWVVYLEVV;
(c) IVFTLDVMMCTASILNLCAISI;

(d) VTVMISIVWVLSFTISCPLLFGL;
(e) PAFVVYSSIVSFYVPFIVTLLVYI;
(f) MLAIVLGVFIICWLPFFITHILN;
(g) VLYSAFTWLGYVNSAVNPIIYTTF and
(h) an effective analogue or fragment of (a) to (g).

27. The method of claim 24 wherein the dopamine receptor is a D2 dopamine receptor and the peptide is selected from the group consisting of

(a) YATLLTLLIAVIVFGNVLVC;
(b) VSLAVADLLVATLVMPWVVY;
(c) TLDVMMCTASILNLCAISID;
(d) RVTVMISIVWVLSFTISCPL;
(e) PAFVVYSSIVSFYVPFIVTL;
(f) LAIVLGVFIICWLPFFITHI; and
(g) LYSAFTWLGYVNSAVNPIIY.

28. The method of claim 26 wherein the disorder is selected from the group consisting of schizophrenia, Huntington's disease, Tourette's syndrome and substance abuse.

29. The method of claim 23 wherein the G-protein coupled receptor is an adrenergic receptor.

30. The method of claim 29 wherein the adrenergic receptor is a β1-adrenergic receptor and the peptide is selected from the group consisting of

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(a) GMGLLMALIVLLIVAGNVLVIVAI;
(b) IMSLASADLVMGLLVVPFGATIVV
(c) ELWTSVDVLCVTASIETLCFIALD
(d) RGLVCTVWAISALVSFLPILMHWW
(e) RAYAIASSVVSFYVPLCIMAFVYL

(f) LGIIMGVFTLCWLPFFLANVVKAF
(g) RLFVFFNWLGYANSAFNPIIYCRS; and
(h) an effective analogue or fragment of (a) to (g).

31. The method of claim 29 wherein the receptor is a β1-adrenergic receptor and the peptide is FFNWLGYANSAFNP.

32. The method of claim 30 wherein the disorder is hypertension or cardiac arrythmia.

33. The method of claim 29 wherein the adrenergic receptor is an α1A-adrenergic receptor and the peptide is selected from the group consisting of
(a) GVGVGFLAAFILMAVAGNLLVILSV;
(b) FIVNLAVADLLLSATVLPFSATMEVL;
(c) DVWAAVDVLCCTASILSLCTISV;
(d) AAILALLWVVALVVSVGPLLGWKEP;
(e) AGYAVFSSVCSFYLPMAVIVVMYC;
(f) LAIVVGVFVLCWFPFFFVLPLGSL;
(g) EGVFKVIFWLGYFNSCVNPLIYPCS; and
(h) an effective analogue or fragment of (a) to (g).

34. The method of claim 29 wherein the receptor is an αA1-adrenergic receptor and the peptide is VFKVIFWLGYFNSCVN.

35. The method of claim 33 wherein the disorder is hypertension or cardiac arrythmia.

36. The method of claim 18 wherein the integral membrane protein has a plurality of transmembrane domains and wherein the peptide comprises the amino acid sequence of

any one of said plurality of transmembrane domains or a fragment or analogue thereof.

37. The method of any of claims 18 to 36 wherein the integral membrane protein is a human protein.

38. An antagonist for a prokaryotic or eukaryotic integral membrane protein having at least one transmembrane domain, the antagonist comprising a peptide having an amino acid sequence of at least four consecutive amino acids selected from the amino acid sequence of said at least one transmembrane domain.

39. The antagonist of claim 38 comprising a peptide having an amino acid sequence of at least ten consecutive amino acids selected from the amino acid sequence of said at least one transmembrane domain.

40. The antagonist of claim 38 comprising a peptide having an amino acid sequence of at least fifteen consecutive amino acids selected from the amino acid sequence of said at least one transmembrane domain.

41. The antagonist of claim 38 comprising a peptide having an amino acid sequence of at least twenty consecutive amino acids selected from the amino acid sequence of said at leasst one transmembrane domain.

42. The antagonist of claim 38 comprising a peptide having the amino acid sequence of said at least one transmembrane domain or an effective fragment or analogue thereof.

43. The antagonist of claim 42 wherein the integral membrane protein is a prokaryotic or eukaryotic plasma membrane protein.

44. The antagonist of claim 42 wherein the integral membrane protein is a prokaryotic or eukaryotic intracellular membrane.

45. The antagonist of claim 43 wherein the integral membrane protein is a mammalian plasma membrane protein.

46. The antagonist of claim 45 wherein the integral membrane protein is selected from the group consisting of

(a) a G-protein coupled receptor;
(b) a tyrosine kinase receptor;
(c) an ion channel;
(d) an ion channel receptor;
(e) a channel protein;
(f) a T cell antigen receptor; and
(g) a transporter protein.

47. The antagonist of claim 45 wherein the integral membrane protein is a G-protein coupled receptor.

48. The antagonist of claim 47 wherein the G-protein coupled receptor is a dopamine receptor.

49. The antagonist of claim 48 wherein the dopamine receptor is a D1 dopamine receptor and the antagonist is selected from the group consisting of

(a) ILTACFLSLLILSTLLGNTLVCAAV;
(b) FFVISLAVSDLLVAVLVMPWKAVAEIA;
(c) NIWVAFDIMCSTASILNLCVISVD;
(d) AAFILISVAWTLSVLISFIPVQLSW;
(e) TYAISSSVISFYIPVAIMIVTYTRI;

(f) TLSVIMGVFVCCWLPFFILNCILPFC;
(g) FDSNTFDVFVWFGWANSSLNPIIYAFNAD and
(h) an effective analogue or fragment of (a) to (g).

50. The antagonist of claim 48 wherein the dopamine receptor is a D2 dopamine receptor and the antagonist is selected from the group consisting of
(a) ATLLTLLIAVIVFGNVLVCMAVS;
(b) LIVSLAVADLLVATLMPWVVYLEVV;
(c) IVFTLDVMMCTASILNLCAISI;
(d) VTVMISIVWVLSFTISCPLLFGL;
(e) PAFVVYSSIVSFYVPFIVTLLVYI;
(f) MLAIVLGVFIICWLPFFITHILN;
(g) VLYSAFTWLGYVNSAVNPIIYTTF and
(h) an effective analogue or fragment of (a) to (g).

51. The antagonist of claim 48 wherein the dopamine receptor is a D2 dopamine receptor and the antagonist is selected from the group consisting of
(a) YATLLTLLIAVIVFGNVLVC;
(b) VSLAVADLLVATLVMPWVVY;
(c) TLDVMMCTASILNLCAISID;
(d) RVTVMISIVWVLSFTISCPL;
(e) PAFVVYSSIVSFYVPFIVTL;
(f) LAIVLGVFIICWLPFFITHI; and
(g) LYSAFTWLGYVNSAVNPIIY.

52. The antagonist of claim 47 wherein the G-protein coupled receptor is an adrenergic receptor.

53. The antagonist of claim 52 wherein the adrenergic receptor is a β1-adrenergic receptor and the antagonist is selected from the group consisting of

(a) GMGLLMALIVLLIVAGNVLVIVAI;
(b) IMSLASADLVMGLLVVPFGATIVV
(c) ELWTSVDVLCVTASIETLCFIALD
(d) RGLVCTVWAISALVSFLPILMHWW
(e) RAYAIASSVVSFYVPLCIMAFVYL
(f) LGIIMGVFTLCWLPFFLANVVKAF
(g) RLFVFFNWLGYANSAFNPIIYCRS; and
(h) an effective analogue or fragment of (a) to (g).

54. The antagonist of claim 52 wherein the receptor is a β1-adrenergic receptor and the antagonist is FFNWLGYANSAFNP.

55. The antagonist of claim 52 wherein the receptor is an α1A-adrenergic receptor and the antagonist is selected from the group consisting of:
(a) GVGVGFLAAFILMAVAGNLLVILSV;
(b) FIVNLAVADLLLSATVLPFSATMEVL;
(c) DVWAAVDVLCCTASILSLCTISV;
(d) AAILALLWVVALVVSVGPLLGWKEP;
(e) AGYAVFSSVCSFYLPMAVIVVMYC;
(f) LAIVVGVFVLCWFPFFFVLPLGSL;
(g) EGVFKVIFWLGYFNSCVNPLIYPCS; and
(h) an effective analogue or fragment of (a) to (g).

56. The antagonist of claim 52 wherein the receptor is an α1A-adrenergic receptor and the antagonist is VFKVIFWLGYFNSCVN.

57. The antagonist of claim 42 wherein the integral membrane protein has a plurality of transmembrane domains and wherein the peptide comprises the amino acid sequence

of any one of said plurality of transmembrane domains or a fragment or analogue thereof.

58. The antagonist of any of claims 38 to 57 wherein the integral membrane protein is a human protein.

59. An antihypertensive composition comprising an antagonist in accordance with any of claims 52 to 56 and a pharmaceutically acceptable carrier.

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